

SCIENCE

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FRIDAY, OCTOBER 16, 1903.

THE ISODYNAMIC REPLACEMENT OF NUTRIENTS.

THIS term was introduced into physiology by Rubner about 1885 as a concise expression of the results of his experiments upon the relative values in nutrition of the three great classes of nutrients, the proteids, carbohydrates and fats.

It was already well established by the labors of previous investigators, notably of Pettenkofer and Voit in Munich, that, aside from a certain rather small amount of proteids which is indispensable, the animal body possesses a remarkable degree of flexibility as regards the nature of the material which it can use to support its vital processes. Aside from the necessary minimum of proteids, the metabolic activities of the body may be supported, now at the expense of the stored body fat, now by the body proteids, and again by the proteids, the fats or the carbohydrates of the food. Whatever may be true economically, physiologically the welfare of the mature animal is not conditioned upon any fixed relation between the classes of nutrients in its food supply, apart from the minimum requirement for proteids. The problem which Rubner proposed to himself was to determine the relative quantities of the several nutrients which were equivalent to each other in the vital processes of the ani-

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